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| 10/814,648 | 04/01/2004 | Yoshiaki Shimizu | Q80869 | 5902 |

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| EXAMINER |
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MRUK, GEOFFREY S

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| ART UNIT | PAPER NUMBER |
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2853

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 03/30/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/814,648

Applicant(s)

SHIMIZU ET AL.

Examiner

Geoffrey Mruk

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3,4 and 7-19 is/are pending in the application.
- 4a) Of the above claim(s) 10-17 and 19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,7-9, and 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2007 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Newly submitted claims 17 and 19 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: species 3, claims 17 and 19, drawn to a liquid ejecting apparatus comprising a control means for controlling an operation of said tube pump, said control means having a function for moving said roller member from a predetermined start position based on an information on said phase of said rotational motion of said roller member detected by said phase detection means.

Since applicant has received an action on the merits for the originally presented species 1, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 17 and 19 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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1. Claims 1, 3, 4, 7, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida (US 5,486,854) in view of Malmstrom et al. (US 6,523,414 B1).

With respect to claim 1, Uchida discloses a liquid ejecting apparatus (Fig. 1), comprising:

- a liquid ejecting head (Fig. 2) having nozzle openings (Fig. 2, element 52) for ejecting liquid drops;
- capping means (Fig. 6, element 2) for sealing a nozzle forming face (Fig. 6, element 51) of said liquid ejecting head to form a closed space (Column 7, lines 11-24);
- a tube pump (Fig. 6, element 4) for discharging a fluid in said capping means sealing said nozzle forming face, said tube pump having a flexible tube member (Fig. 6, element 3) having a curved part (Fig. 6, element 3, i.e. profile of element 3 in contact with element 6) and a roller member (Fig. 6, element 7) rolling on an inner periphery of said curved part while pressing and deforming said tube member (Column 9, lines 6-17), wherein there exists a leak point (Fig. 6, i.e. between elements 65 and 66) opposite where a pressing deformation amount of said curved part by said roller member becomes insufficient (Column 9, lines 17-23);
- phase detection means (Fig. 6, elements 67, 68; Column 9, lines 24-31) for detecting a phase of a rotational motion of said roller member along said inner periphery of said curved part; and

- control means for controlling an operation of said tube pump, said control means having a function for stopping (Fig. 18, element Y) said roller member at a predetermined position (Column 2, lines 8-12) based on an information on said phase of said rotational motion of said roller member detected by said phase detection means (Column 8, line 36, i.e. driving power source),
- wherein said predetermined position is a position other than said leak point (Column 9, lines 32-36).

With respect to claim 3, Uchida discloses said predetermined position is a position of said curved part opposite to said leak point (Fig. 3, i.e. position X to Y).

With respect to claim 4, Uchida discloses said control means has a function for stopping said roller member at said predetermined position when stopping said tube pump at an end of a suction operation (Column 10, lines 13-31).

With respect to claim 7, Uchida discloses said phase detection means (Fig. 6, elements 67, 68) has a rotator (Fig. 6, element 6) rotating in synchronization with said rotational motion of said roller member (Fig. 6, element 7) and a detector for detecting a phase of a rotational motion of said rotator (Column 9, lines 24-31).

With respect to claim 18, Uchida discloses a liquid ejecting apparatus (Fig. 1), comprising:

- a liquid ejecting head (Fig. 2) having nozzle openings (Fig. 2, element 52) for ejecting liquid drops
- a cap (Fig. 6, element 2) that seals a nozzle forming face (Fig. 6, element 51) of the liquid ejecting head to form a closed space (Column 7, lines 11-24);

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- a tube pump (Fig. 6, element 4) that discharges a fluid in the cap sealing the nozzle forming face,
- wherein the tube pump has a flexible tube member (Fig. 6, element 3) having a curved part and a roller member rolling on an inner periphery of the curved part (Fig. 6, element 3, i.e. profile of element 3 in contact with element 6) while pressing and deforming the tube member (Column 9, lines 6-17),
- wherein a leak point (Fig. 6, i.e. between elements 65 and 66) exists where a pressing deformation amount of the curved part by the roller member becomes insufficient (Column 9, lines 17-23);
- a phase detector (Fig. 6, elements 67,68; Column 9, lines 24-31) that detects a phase of a rotational motion of the roller member along the inner periphery of the curved part; and
- a controller that controls an operation of the tube pump, wherein the controller stops the roller (Fig. 18, element Y) member at a predetermined position (Column 2, lines 8-12) based on a phase of the rotational motion of the roller member detected by the phase detector (Column 8, line 36, i.e. driving power source),
- wherein the predetermined position is a position other than the leak point (Column 9, lines 32-36).

However, Uchida fails to disclose wherein said curved part of said tube member is in a circular ring shape.

Malmstrom discloses a pump system (Fig. 4B) wherein said curved part of said tube (Fig. 4B, element 84) member is in a circular ring shape (Fig. 4B, element 84C).

At the time of the invention, it would have been obvious to one of ordinary skill in the art to use the circular ring shape tube disclosed by Malmstrom in the ink jet recording apparatus of Uchida. The motivation for doing so would have been "pressure is monitored both upstream and downstream from the pump rotor to ensure that 1) a known quantity of solution reaches the portion of the tube 84 which engages the pump rotor" (Column 10, lines 47-57).

2. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uchida (US 5,486,854) in view of Malmstrom et al. (US 6,523,414 B1) as applied to claims 1 and 7 above, and further in view of Sugiyama et al. (US 6,291,815 B1).

With respect to claims 8 and 9, Uchida discloses a phase detection means (Fig. 6, elements 67, 68) for detecting a phase of a rotational motion of said rotator (Fig. 6, element 6; Column 9, lines 24-31).

However, Uchida fails to disclose:

- said rotator has a notch and said detector detects said phase of said rotational motion of said rotator based on a change in a detection signal at said notch and
- said detector has a light emitter for radiating light toward said rotator and a light receiver for receiving light radiated from said light emitter.

Sugiyama discloses a device for measuring rotation angle of a rotary element where "A set of a light emitter 20 and an light receiver 22 forming a first photo sensor SSC are provided adjacent to a radial region of the shutter disk to oppose the first array 14 of the

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notches 12. The light emitter 20 may be made of a light emitting diode adapted to emit a light beam toward the light receiver 22 which may be made of a photo transistor. Similarly a second set of a light emitter 24 and a light receiver 26 forming a second photo sensor SS1 are provided adjacent to a radial region of the shutter disk to oppose the second array 18 of the openings 16" (Column 5, lines 6-15).

At the time of the invention, it would have been obvious for one of ordinary skill in the art to use the device for measuring rotation angle of a rotary element disclosed by Sugiyama as the tube pump sensor disclosed by Uchida. The motivation for doing so would have been "to provide an improved device for measuring a rotation angle of a rotary element so as to be able to detect an error in the measurement almost immediately upon the occurrence thereof" (Column 1, lines 63-67).

Response to Arguments

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey Mruk whose telephone number is 571 272-2810. The examiner can normally be reached on 7am - 330pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GSM
3/23/2007



STEPHEN MEIER
SUPERVISORY PATENT EXAMINER